Layer 2 Multicast: An efficient choice for one-to-many transmission

Multicast technology allows one source, or server, to communicate with a select group of destinations. It lies between the 1:1 communication model enabled by unicast and the 1:all model supported by broadcast.

With multicast the source of the communication generates only a single data stream, keeping the network load constant and performance efficient. The intelligence built into the network management replicates the data stream as late as possible in the transmission and delivers the streams to those who have asked for it. This keeps traffic from needlessly cluttering the network and overburdening the server.

Multicast differs from broadcast because it is delivered only to those destinations that request it, thus reducing overheads and optimising the experience for the network as well as receiver. It differs from unicast in that only one data stream is generated from the sender regardless of whether the transmission is to one person, a thousand or a million. Trying to serve a cricket match video to a million viewers using a unicast model would result in a server crash!

An obvious application of multicast technology is in the delivery of high quality multimedia content such as TV to consumers. However there are a host of other enterprise applications as well. For highly time-sensitive and ongoing traffic such as a cable TV channel or news ticker, multicast is the most efficient and effective distribution method. In fact, any network that delivers data or multimedia to multiple opt-in receivers benefits from multicast through the reduction of network congestion. A few of these potential applications are analysed below.

CCTV on large campuses: Following the experience of many overseas markets CCTV surveillance is growing into a necessity in many large public or semi-public facilities including airports, defence and even large enterprise campuses. Layer 2 multicast can offer an economical, flexible and scalable way of managing CCTV feeds.

Financial information: Real-time is money in a financial trading environment, so having the lowest latency to deliver relevant financial news to traders is extremely important. A Layer 2 Multicast solution delivers extremely fast and reliable traffic streams to share price terminals for example, supporting the to-the-minute needs of financial traders. The same model can also apply to sports score updates and headline tickers.

Telepresence / video conferencing: Telepresence and high-quality video conferencing are gaining in importance as Indian enterprises engage with stakeholders around the world. Layer 2 Multicast is a viable option to offer high quality Telepresence while keeping telecoms costs at manageable levels.

Gaming: The tremendous rise in popularity of massive multiplayer role playing games in recent years means gaming traffic will need to be managed more effectively. This will become even more pressing with the advent of augmented and virtual reality experiences and games.

Virtual data center: The data center market is transitioning from physical servers to virtual server infrastructures, where geographically distributed data centres are connected over the cloud. Software, databases, computing and analytics are all collaborative, enabled through high speed interconnects. Large file and database access and transfer, as well as collaborative software need high performance networks with effective traffic management capabilities.